

ACTIVE POWER FILTER FOR ISOLATING ELECTRICALLY NOISY LOAD FROM LOW NOISE POWER SUPPLY

ABSTRACT OF THE DISCLOSURE

5 An active power filter includes a feedback resistor and a shunt capacitor, an operational amplifier equivalent subcircuit, and a voltage drop source. The shunt capacitor connects the positive terminals of the low noise power supply and the noisy load to the positive terminal of the operational amplifier equivalent subcircuit. The feedback resistor connects the negative terminal of the noisy load and the output of the operational amplifier equivalent subcircuit to the negative terminal of the shunt capacitor. The voltage drop source connects the negative terminal of the low noise power supply to the negative terminal of the operational amplifier equivalent subcircuit. The operational equivalent subcircuit includes an operational amplifier, three resistors, three capacitors, and a transistor. The first resistor connects the positive terminal of the voltage drop source to the negative input terminal of the operational amplifier. The second resistor connects the output of the operational amplifier to the gate of the transistor. The drain of the transistor is coupled to the negative terminal of the noisy load. The source of the transistor is coupled to the negative terminal of the voltage drop source and to the negative terminal of the low noise direct current power supply. The first capacitor connects the output of the operational amplifier to the negative input terminal of the operational amplifier. The second capacitor connects the output of the operational amplifier to the gate of the transistor. The third capacitor and a third resistor are connected in series between the gate of the transistor and the negative terminal of the low noise direct current power supply.

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